Food Risk Management

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Purpose

- Understand the role of food and water in a bioterrorist event.
- Reinforce food safety practices to minimize the risk of potential food- or water-borne illness due to intentional and unintentional contamination.
  - ➔ Food/Water Vulnerability Assessment Guide (TG-188)
  - ➔ Food Risk Management (DA PAM 30-22)

Indicators of Today's Biological Agent Threat

- Iraq 1985-1991, developed anthrax, botulinum toxin, & aflatoxin.
- Tokyo, 1995 – Terrorist organization releases sarin nerve agent in subway.
  - Failed in 1994 in attempt to release anthrax & botulinum toxin.

Feasibility of Biological Weapons

- ✓ Low cost
- ✓ Readily available
- ✓ Low technological support
- ✓ Easily disseminated
- ✓ Difficult to detect
- ✓ Deniable
- ✓ Able to cause mass casualties

TERRORISM: Longer incubation periods are more suitable for terrorist activities *(natural pathogens)*

- ➔ Allows time to distance terrorists from event.
- ➔ May appear to be natural epidemic or food related illness.

Scenario for Terrorist Attacks

- ➔ Product tampering
- ➔ Sabotage of specific food groups or industries
- ➔ Attacks directed at a country's institutions, agencies, or departments
- ➔ Attack on ethnic groups in opposition to terrorist goals

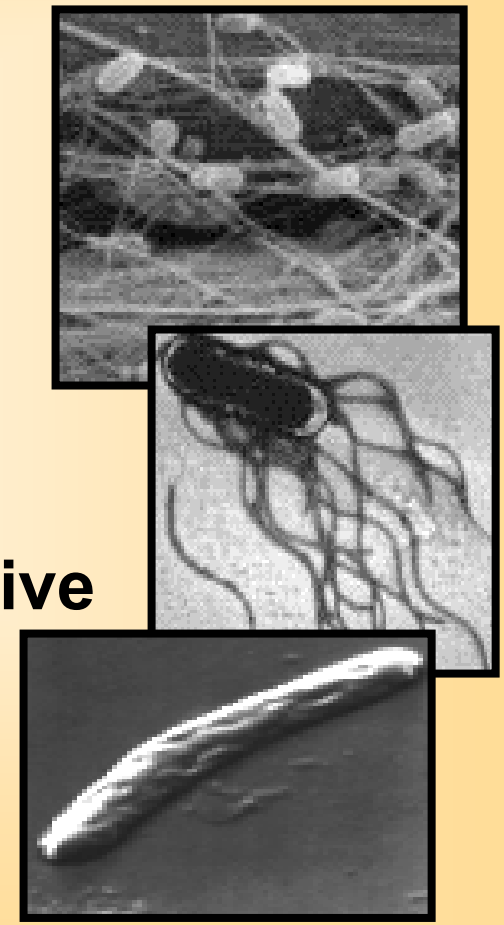
Domestic Use of Biological Weapons

Oregon (1984) – Salmonella contaminated salad bars.

- 10 restaurants implicated; 751 cases of gastroenteritis
- Infected employees amplify spread of illness
- Errors in food rotation & refrigeration facilitated growth of organism

Potential Pathogens

- Numerous possibilities
- Vary from classical BW agents to natural food related pathogens.
- Could include viruses, bacteria, & toxins.
- Spore-forming pathogens may survive traditional food processing temperatures.



What is the Food Threat?

- Public accessible foods
- Processed foods
- Water
- Uncooked foods
- Fresh fruits & vegetables
- Agent Vectors

EXAMPLES

Processed Foods

- 30 grams of ricin toxin
- Easily concealed in a pocket
- Could lethally poison 150 pounds of meat
- Enough to produce 1,500 hotdogs

Fresh Fruits & Veges

…often not "washed" AND sanitized in field feeding operations.

EXAMPLE
-- Water --

- Many pathogens survive in water
- Easily disseminated to public
- Bottled water common

- **ROWPU effective against toxins, bacteria, viruses, & parasites**
- **Coagulation/Flocculation not effective against pathogens *(sediments only)***
- **Chlorination not effective against parasites & does NOT destroy Anthrax spores**

Foodborne Illness

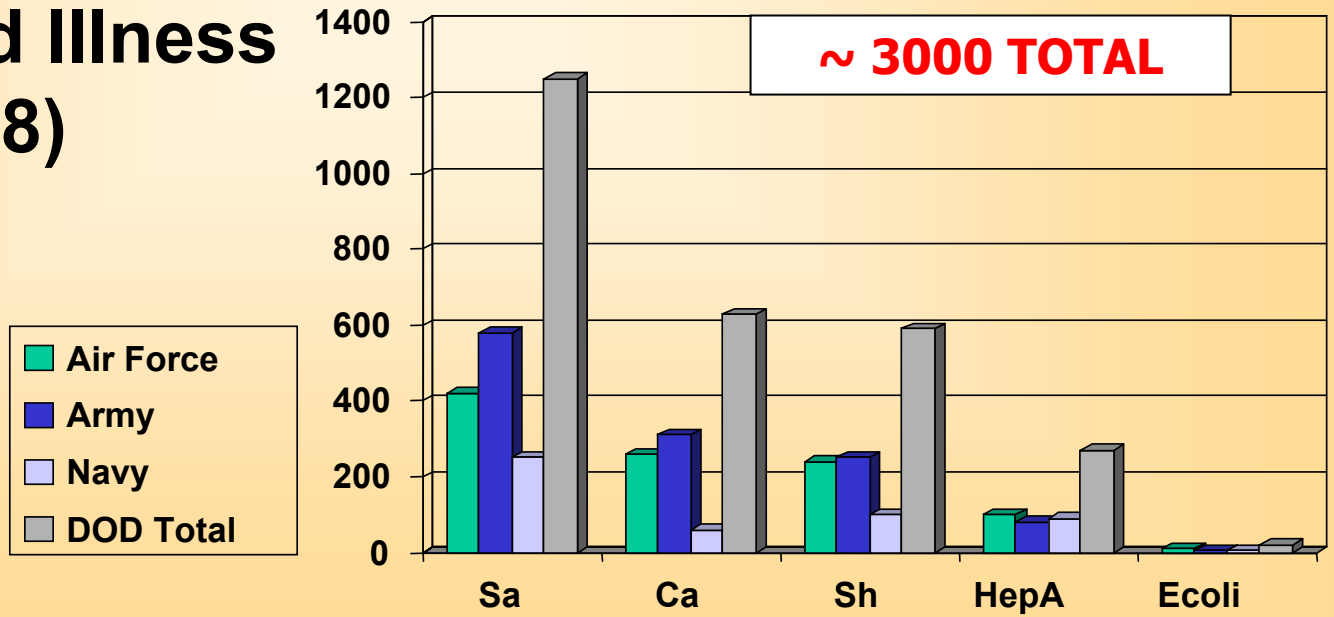
- **Diagnosed Cases in US are increasing**
  (Outbreaks in the News: E-Coli & Listeria)

76 million cases annually

325,000 hospitalizations

5,000 deaths

DOD Reported Illness (1996-98)



Foodborne Illness IS a Readiness Issue

1998, Saudi Arabia: 110 soldiers hospitalized for Salmonellosis after eating in base camp dining facility.

[**43%** of casualties came from a single infantry unit]

Consider the effects of 1 meal in a combat situation.

Food and Water Antiterrorism

Problem:

- No institutionalized process to address *intentional contamination* of food or water.
- Vulnerability surveys focus on conventional or aerosol attacks with collateral damage to food/water.
- Process & technology are inadequate to protect us.

Solution:

- ✓ **ID secure food & water handling procedures.**
- ✓ **Validate new detection equipment.**
- ✓ **Institutionalized approach (Risk Management).**

The Role of Army Food Service Personnel

Food Safety & Protection

Observations

- Improper handling of rations
- Inadequate temperature controls & monitoring
- Untrained,unqualified or inexperienced personnel
- → Inadequate Supervision by Food program Leaders
- Inadequate Surveillance by Medical personnel

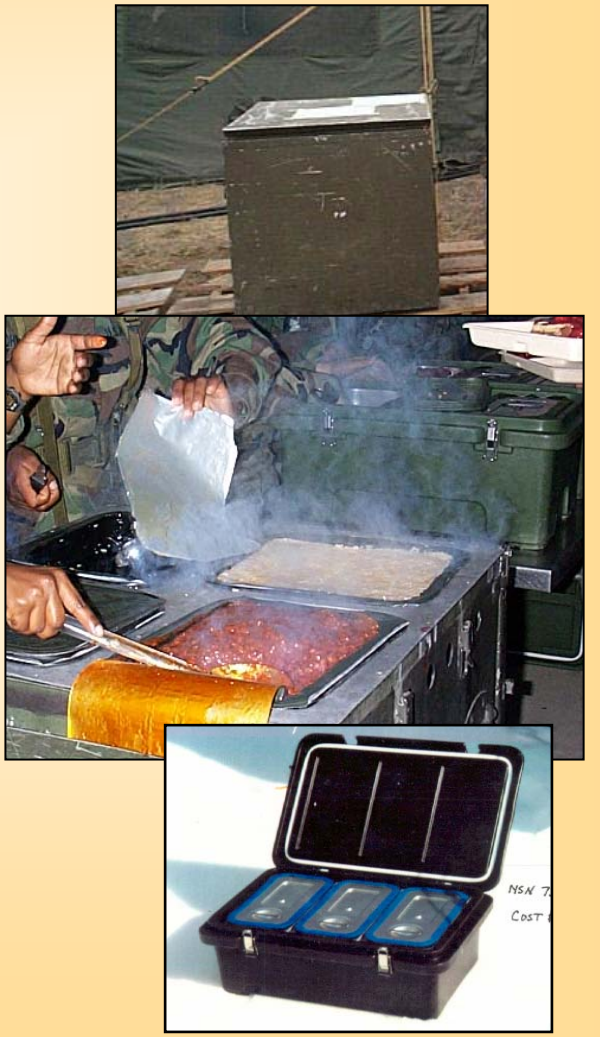
Inspecting Subsistence

TISA: Installation Vet Personnel conduct routine inspections (Never 100%)

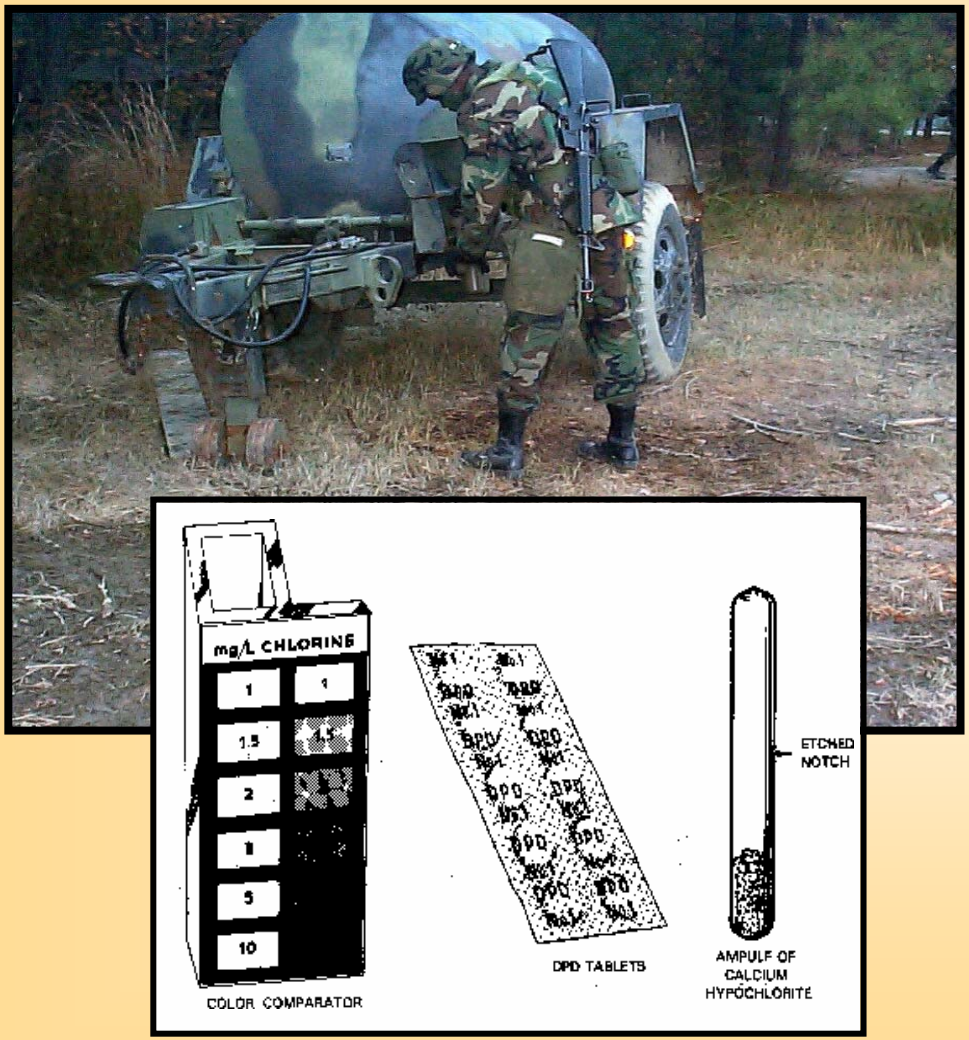
Unit: Ration personnel should check their rations upon receipt; Report suspect or questionable supplies to the AVI/TISO.

Temperature Standards

- **Time and temperature discipline are critical in the prevention of bacterial growth.**
  - ✓ Cold storage
  - ✓ Cooking
  - ✓ Hot holding *(during serving and remote feeding)*



POTABLE WATER



- ✓ Inspect water trailer before use
- ✓ Obtain water from approved source or fill point
- ✓ Chlorinate to 1 ppm
- ✓ Protect from contamination

Knowing the standards does not assure safety…food processes must be managed and supervised at all levels.

'Risk management is the Army's principal risk-reduction process to protect the force.

…Our goal is to make risk management a routine part of planning and executing operational missions.'

Chief of Staff, Army, July 1995

Risk Assessment / HACCP

- **Conduct unit level risk assessment of the biological threat; conduct food operations risk assessment based on your menu.**
  - ✓ Employ HACCP/Food RM Principles
  - ✓ CHPPM TG-244, The Medical NBC Battlebook
    http://chppm-www.apgea.army.mil/armydocs.asp?pub_type=TG
  - ✓ Need to identify potential points of human intervention based on ease and accessibility

TG 188
U.S. Army Food and Water Vulnerability Assessment Guide
(Feb 02)

Prepared by USACHPPM & DoD Veterinary Service Activity

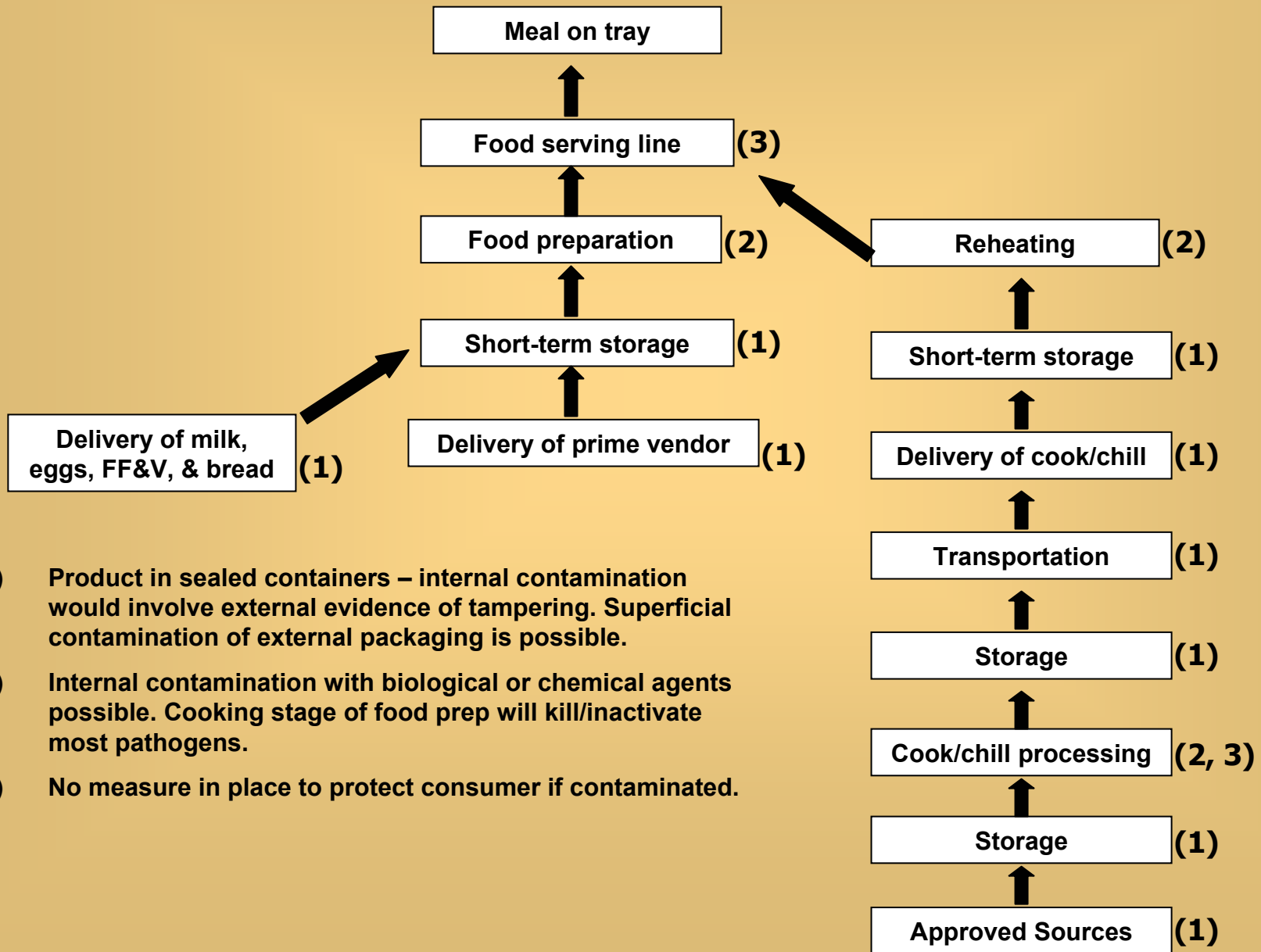
Food Security Assessment Team (FSAT)

- **Designated by installation Cdr:**
  - ✓ Installation Force Protection Officer
  - ✓ Inst. Preventive Medicine Officer
  - ✓ Inst. Veterinary Corps Officer
  - ✓ Inst. Food Advisor
  - ✓ CID
  - ✓ Military Intelligence
  - ✓ Others…
- **Applies RM process to review & assess installation food systems.**

Vulnerability Assessment

- ID all food assets
- Describe installation food procurement sources & distribution from their sources.
- Develop flow diagrams for each asset to identify vulnerable areas:
  - ➔ Supply
  - ➔ Distribution
  - ➔ Storage
  - ➔ Retail sale or Preparation & Serving

Example: DFAC Flow Diagram



(1) Product in sealed containers – internal contamination would involve external evidence of tampering. Superficial contamination of external packaging is possible.

(2) Internal contamination with biological or chemical agents possible. Cooking stage of food prep will kill/inactivate most pathogens.

(3) No measure in place to protect consumer if contaminated.

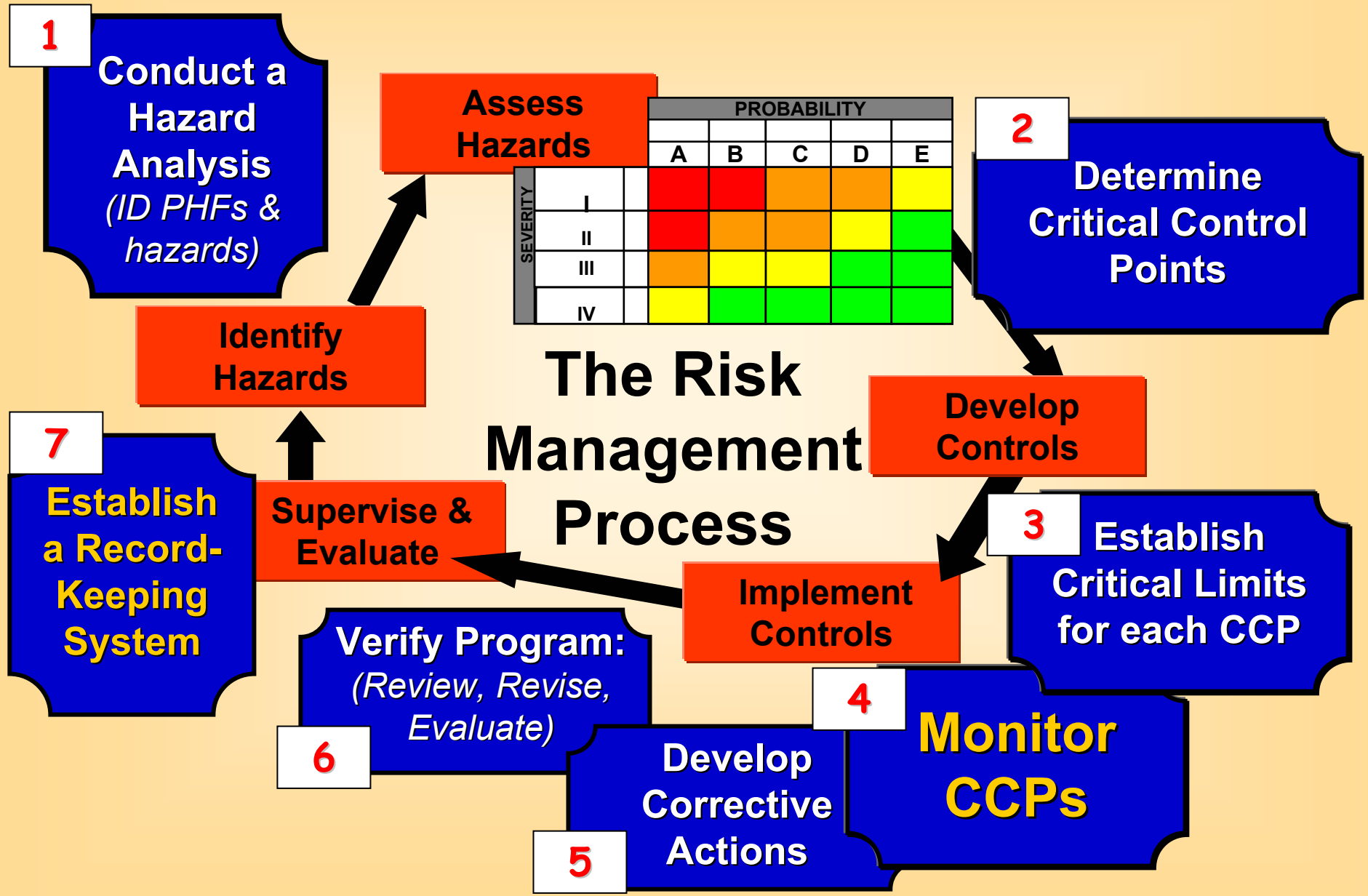
Risk Management
-- Develop Controls --

- ✓ **Educational**
  - ➔ Cooks, Contractors, Commanders, CID, Force Protection personnel, etc…
  - ➔ Food safety & Sanitation/Hygiene practices
  - ➔ ID signs of contamination/tampering
  - ➔ ID signs/symptoms of illnesses due to NBC
- ✓ **Physical**
  - ➔ Security; Facility Access; Periodic Inventories
- ✓ **Avoidance**
  - ➔ Personnel checks; Review Menu; Food Safety Practices

DA PAM 30-22

Food Risk Management Requirement

Food RM = Applying HACCP Principles



Food Risk Management

DA Pam 30-22

- **…enhances the prevention of foodborne illnesses by systematically applying prescribed food protection and sanitation standards.**
- Minimum Requirement: **maintain, monitor, and record time & temperature controls for PHFs.**
  - ➔ Cooking
  - ➔ Holding *(hot & cold)*
  - ➔ Cooling

Table 3.7-1

Time & Temperature Risk Management: Minimum Monitoring Requirements

Responsible Agent	Process	Number of Samples & Frequency		Monitoring Criteria
Food Operations Sergeant / Manager	Cold Storage	All units	Once each meal period *(Breakfast, Lunch, Dinner)*	• Monitor all refrigeration units… • Verify the ambient temp… • Record temperature on data log.
Food Operations Sergeant / Manager	Cooking	3 menu items	Each meal period	• Spot-check at least 1 meat,… • Spot-check 2 or more other… • Monitor internal product temp… • Record internal food temp…
Food Operations Sergeant / Manager	Cold Holding	3 items	Each meal period	• Spot-check at least 1 meat,… • Spot-check 2 or more other… • Monitor same menu items… • Record internal food temp…

Table 3.7-1
Monitoring Requirements

Food Operations Sergeant/Manager

Cold Storage	All units	Once each meal period
Cooking	3 items	Each meal period
Cold Holding	3 items	Each meal period
Hot Holding	3 items	Each meal period
Cooling	All hot items	Each meal period
Re-heating leftovers	All leftovers served hot	Each meal period

Example: Cooking Log

DATE: 1 Apr 02 **MEAL:** **Breakfast** (**Lunch**) **Dinner** **Other** _____

PROCESS: Cooking and/or Re-Heating Leftovers

Minimum Internal Temperature (see back of form for instructions)

CATEGORY: ***1*** *(≥ 145 F)* ***2*** *(≥ 155F)* ***3*** *(≥ 165F)*

MONITORED BY: SSG Thomas

TITLE: First Cook

LOCATION	FOOD/MENU ITEM & CATEGORY	Internal Temp (F)	TIME	Corrective Action *Mandatory for non-compliance*
Combi Oven #2	Baked Chicken **Cat:** 3	160 F	1035	X Continue Cooking
		168 F	1045	___Continue Cooking X Recheck Temp.
Combi Oven #3	Meatloaf **Cat:** 2	159 F	1038	___Continue Cooking
				___Continue Cooking ___Recheck Temp.
Steam Kettle #1	Mixed Veges **Cat:** 1	147 F	1050	___Continue Cooking
				___Continue Cooking ___Recheck Temp.
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				___Continue Cooking ___Recheck Temp.

Table 3.7-1
Monitoring Requirements

Food Advisor or Food Program Manager

Audit of food service facilities	Each facility or food service operation	Monthly

Monitoring Criteria

- ✓ Document on HACCP Monitoring Report (TB MED 530)
- ✓ Focus on Processes
- ✓ Copy provided to FOS/Mgr; Original filed with PM inspection documents

HAZARD ANALYSIS CRITICAL CONTROL POINT MONITORING REPORT

For use of this form, see TB MED 530; the proponent agency is OTSG.

1. ESTABLISHMENT NAME

2. ESTABLISHMENT ADDRESS

3. FOOD

4. HAZARD

PROCESS (STEPS) CIRCLE CCPs	CRITERIA FOR CONTROL	MONITORING PROCEDURE OR WHAT TO LOOK FOR	ACTIONS TO TAKE WHEN CRITERIA IS NOT MET
5. RECEIVING/ STORING	a. ☐ Approved source (inspected) ☐ Shellfish tag ☐ Raw/Cooked/Separated in storage ☐ Refrigerate at ≤40°F ☐ Free of deterioration or spoilage	b. ☐ Shellfish tags available ☐ Shellfish tags complete ☐ Measure food temperature ☐ No raw foods stored above cooked or ready-to-eat foods ☐ Organoleptic testing	c. ☐ Discard food ☐ Return food to vendor ☐ Separate raw and cooked food ☐ Discard cooked food contaminated by raw food ☐ Food temperature: More than 40°F for more than 4 hours, discard food
6. THAWING	a. ☐ Under refrigeration ☐ Under running water less than 70°F, product ≤40°F or no more than 4 hours or less at > 40°F ☐ Microwave ☐ Part of cook process	b. ☐ Observe method ☐ Measure food temperature	c. ☐ Water temperature > 70°F, discard food ☐ Food temperature > 40°F for more than 4 hours, discard food
7. PROCESSING PRIOR TO COOKING	a. Food ≤40°F or no more than 4 hours or less at > 40°F	b. ☐ Observe quantity of food at room temperature ☐ Observe time food held at room temperature	c. ☐ Food temperature > 40°F for more than 4 hours, discard food (time includes thawing time)
8. COOKING	a. Temperature to kill pathogens: Food temperature at thickest part more than or equal to _____ °F	b. ☐ Measure food temperature at thickest part	c. ☐ Continue cooking until food temperature at thickest part is more than or equal to _____ °F
9. HOT HOLDING	a. Food temperature at thickest part more than or equal to _____ °F	b. ☐ Measure food temperature at thickest part every _____ minutes	c. Food temperatures: ☐ < 140°F for more than 4 hours, discard food ☐ < 140°F for less than 4 hours, rapidly reheat to 165°F and hold at 140°F

Conclusions

- Food as a vehicle for bioterrorism has been used.
- The potential for bioterrorism in the future is credible.
- Detection technology for biological agents is lacking *(Has limited reliability).*
- Risk management is key to ensure safe food.
- Food operations sergeant must be vigilant in food safety practices and food protection measures.

QUESTIONS

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